

## **REMARKS**

Entry of the foregoing, and further and favorable reconsideration of the subject application are respectfully requested. By the present Amendment, paragraph [0008] of the specification has been amended to capitalize the trademark FIBERMAX™. The remaining claims have been amended to delete their dependency from withdrawn claims, and to more precisely define the claimed invention. In particular, the claims have been amended to recite sucrose synthase genes (described at least at pp.14-18 of the specification and in the sequence listing); to DNA which is at least 95% homologous to the sucrose synthase gene explicitly disclosed in the specification (see, e.g., p. 10, line 26 – p. 12, line 4 of the specification); and to DNA encoding the sucrose synthase of SEQ ID NO:2. No new matter has been added.

Applicants gratefully acknowledge the Examiner's statement, at p. 10 of the Official Action, that claims 1-3, 8-17 and 21-30 are free of the prior art.

### ***Oath/Declaration***

At p. 3 of the Official Action, the Examiner notes that the originally submitted Oath and Declaration is defective because it does not identify the citizenship of each inventor, and does not indicate the priority claim of the instant application to provisional application 60/251,852. A substitute Oath and Declaration is submitted herewith.

### ***Claim Objections***

At p. 3 of the Official Action, the Examiner objects to claims 1 and 15 on the basis that they encompass non-elected subject matter. By the present amendment,

claims 1 and 15 have been amended in order to remove reference to non-elected subject matter.

At p. 4 of the Official Action, the Examiner objections to claims 8, 9, 21, 22, 24, 26, and 30 because they depend, in part, from withdrawn claims. By the present amendment, these claims have been amended to correct their dependency from withdrawn claims.

In view of these amendments, withdrawal of these objections is respectfully requested.

***Claim Rejections – 35 USC §112***

Claims 1-3, 8-17, and 21-30 are rejected as purportedly failing to comply with the written description requirement of 35 USC 112, first paragraph. This rejection is respectfully traversed.

At p. 5 of the Official Action, the Examiner concedes that the present specification adequately describes “a nucleic acid sequence of SEQ ID NO: 1 and an amino acid sequence of SEQ ID NO: 2; and lists the GenBank Accession numbers of several sucrose synthase sequences known in the art on pages 14-18 of the specification.” However, the Examiner asserts that the present specification does not adequately describe

a polynucleotide sequence having 70% sequence identity to SEQ ID NO: 1; a nucleotide sequence hybridizing under stringent conditions with a polynucleotide sequence encoding SEQ ID NO: 2; a nucleotide sequence hybridizing under stringent conditions with a polynucleotide sequence comprising SEQ ID NO: 1; or a part of an RNA capable of being translated into an active sucrose synthase protein that encodes an active sucrose synthase protein.

*Official Action at 5.*

Applicants maintain that the claims, as originally filed, fully comply with the written description requirement of 35 USC 112, ¶1. Nevertheless, without conceding to the Examiner's arguments, but solely in an effort to expedite prosecution, the claims have been amended to recite sucrose synthase genes (described at least at pp. 14-18 of the specification and in the sequence listing), to DNA which is at least 95% homologous to the sucrose synthase genes explicitly disclosed in the specification, and to DNA encoding the sucrose synthase of SEQ ID NO: 2. In view of these amendments, withdrawal of this rejection is respectfully requested.

Claims 1-3, 8-17, and 21-30 are rejected as purportedly failing to comply with the enablement requirement of 35 USC 112, first paragraph. This rejection is respectfully traversed.

At p. 9 of the Official Action, the Examiner asserts that

Undue trial and error experimentation would be required for one of ordinary skill in the art to screen through the multitude of non-exemplified sequences, either by *in vitro* testing for cellulose synthesizing activity or by *in vivo* transformation and analysis of fiber properties or development, in order to identify those sucrose synthase isoforms that when expressed in a plant would produce plants with an altered fiber development or properties, or improve fiber yield, improve fiber quality, or increase seed size by providing cells of plants as broadly claimed.

Applicants maintain that the claims, as originally filed, fully comply with the enablement requirement of 35 USC 112, ¶1.

The Examiner's attention is drawn to the accompanying declaration by Dr. Tony Arioli. In summary, this declaration provides confirmation of and further details for the experiments described in Example 3. Dr Arioli also expresses his opinion that, contrary to what has been asserted by the Examiner, the specification does provide guidance for using other polynucleotides encompassed by the claims that encode an

active sucrose synthase to alter fiber development and improve fiber quality by providing cells of plants with a polynucleotide capable of being translated into an active sucrose synthase; the specification does teach that sucrose synthase encoding polynucleotides other than SEQ ID No. 1 alter fiber development; and the specification does teach an increase in fiber size.

In addition, Dr Arioli also points out that experimental results according to Example 3 of the patent application indicate that the differences between sucrose synthase isoforms, heavily relied upon by the Examiner to substantiate the enablement rejection, are not critical to achieve fiber length increase in his opinion. Indeed, the over-expression in cotton fiber cells of a sucrose synthase isoform normally expressed in tubers from potatoes and normally involved in starch biosynthesis does achieve the goals of the invention. A pivotal feature of the invention for the increase of fiber length is the increase in the level of sucrose synthase in fiber cells. The normal fate and expression pattern of the enzymatic isoform of sucrose synthase actually used to increase the fiber length is not critical.

Nevertheless, without conceding to the Examiner's arguments, but solely in an effort to expedite prosecution, the claims have been amended to recite sucrose synthase genes (described at least at pp. 14-18 of the specification and in the sequence listing), to DNA which is at least 95% homologous to the sucrose synthase genes explicitly disclosed in the specification, and to DNA encoding the sucrose synthase of SEQ ID NO: 2. Applicants respectfully submit that it would not require undue experimentation for one of ordinary skill in the art at the time the application was filed to make and use the invention now claimed. Accordingly, withdrawal of this rejection is respectfully requested.

Claim 11 is rejected under 35 USC 112, second paragraph, as purportedly indefinite. This rejection is respectfully traversed.

The Examiner asserts, at p. 10 of the Official Action, that claim 11 is indefinite in its use of the trademark FIBERMAX™. Without conceding to the Examiner's position, but solely in an effort to expedite prosecution, claim 11 has been deleted without prejudice to or disclaimer of the subject matter contained therein.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

In the event that there are any questions concerning this paper, or the application in general, the Examiner is respectfully urged to telephone Applicants' undersigned representative so that prosecution of the application may be expedited.

Respectfully submitted,

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